

WHAT IS CLAIMED IS:

1. A system for exerting force on an exterior treatment portion of a user's body, comprising:
a covering member for covering the treatment portion; and
an electroactive polymer (EAP) actuator operably connected to the covering member.
2. The system of claim 1 wherein the EAP actuator is rigidly connected to the covering member.
3. The system of claim 2 wherein the EAP actuator is connected to the covering member by adhesive.
4. The system of claim 2 wherein the EAP actuator is stitched to the covering member.
5. The system of claim 2 wherein the EAP actuator is woven into the covering member.
6. The system of claim 1 and further comprising:
a controller operably coupled to the EAP actuator to provide a drive signal to drive actuation of the EAP actuator.
7. The system of claim 6 wherein the covering member is flexible such that actuation of the EAP actuator drives deformation of the covering member.

8. The system of claim 7 and further comprising:
a heart sensor sensing a sinus rhythm of the
heart and providing a heart sensor signal
indicative of the sinus rhythm.
9. The system of claim 8 wherein the controller is
configured to provide the drive signal based on the
heart sensor signal.
10. The system of claim 9 and further comprising:
a feedback component sensing a feedback
characteristic and providing a feedback
signal indicative of the sensed feedback
characteristic.
11. The system of claim 10 wherein the controller is
configured to provide the drive signal based on the
feedback signal.
12. The system of claim 11 wherein the feedback
component comprises:
a metabolic sensor sensing a metabolic
characteristic and providing the feedback
signal based on the metabolic
characteristic.
13. The system of claim 11 wherein the feedback
component comprises:
a blood flow sensor.

14. The system of claim 11 wherein the feedback component comprises:
 - a blood pressure sensor.
15. The system of claim 1 wherein the covering member comprises a garment.
16. The system of claim 6 wherein the controller is configured to provide the drive signal to exert counterpulsation force on the treatment portion.
17. The system of claim 1 and further comprising:
 - a plurality of EAP actuators operably connected to the covering member.
18. A counterpulsation apparatus, comprising:
 - a garment; and
 - an electroactive polymer (EAP) actuator connected to the garment.
19. The counterpulsation apparatus of claim 18 and further comprising:
 - a plurality of EAP actuators connected to the garment.
20. The counterpulsation apparatus of claim 19 wherein the garment is formed of a fabric material.

21. The counterpulsation apparatus of claim 20 wherein the plurality of EAP actuators are woven into the fabric material.

22. The counterpulsation apparatus of claim 20 wherein the plurality of EAP actuators are stitched to the fabric material.

23. The counterpulsation apparatus of claim 20 wherein the plurality of EAP actuators are connected to the fabric material with adhesive.

24. The counterpulsation apparatus of claim 19 wherein the garment comprises multiple layers of fabric material and wherein the plurality of EAP actuators are disposed between the layers.

25. A method of exerting pressure on an external treatment area of a patient, comprising:
 providing a garment to cover the treatment area;
 and
 actuating electroactive polymer (EAP) actuators connected to the garment.

26. The method of claim 25 and further comprising:
 sensing a heart beat of the patient and
 providing a heart beat sensor signal indicative of the sensed heart beat.

27. The method of claim 26 and further comprising:
actuating the EAP actuators to exert
counterpulsation pressure based on the
heart beat sensor signal.
28. The method of claim 27 and further comprising:
sensing a biological characteristic indicative
of an efficaciousness of the
counterpulsation pressure and providing a
biological sensor signal indicative of the
sensed characteristic.
29. The method of claim 28 wherein actuating the EAP
actuators comprises:
actuating the EAP actuators based on the
biological sensor signal.